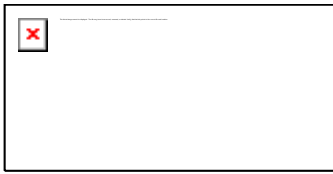


## Rymer, Edwina

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**From:** Brad Bacon <Brad.Bacon@pdce.com>  
**Sent:** Saturday, October 04, 2014 1:37 PM  
**To:** Ben Grunewald;Leslie Savage;Bauer, Robert  
A;robert.worstall@dnr.state.oh.us;r.hoffman@kcc.ks.gov;austin.holland@ou.edu;Gertson, Rod;Jeff Bull;brian.woodard2@chk.com;Nygaard, Kris  
J;Timothy\_Tyrrell@xtoenergy.com;Linda McDonald;dhenry@hilcorp.com;Dellinger, Philip;Platt, Steve;Bates, William;Scott Anderson;Trenton Cladouhos;Grant Bromhal;Tim Baker;Gerry Baker;Mike Paque;Steele, Edward (GE Global Research);tom.kropatsch@wyo.gov;WRish@hullinc.com;Dorsey, Nancy  
**Cc:** Mike Paque;Dan Yates;Rick.Simmers@dnr.state.oh.us;Gerry Baker  
**Subject:** A view of the Traffic ight System  
**Attachments:** removed.txt; Traffic Light System.docx

I am attaching a letter that describes how I see the traffic light system. I put this together so I could focus my thoughts, but I thought I would show how I view this complicated subject and demonstrate where "I fet it" and also show where I may not understand.



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**From:** Ben Grunewald [mailto:ben@gwpc.org]  
**Sent:** Thursday, October 02, 2014 1:54 PM

**To:** Ben Grunewald; Leslie Savage; Bauer, Robert A; robert.worstall@dnr.state.oh.us; r.hoffman@kcc.ks.gov; austin.holland@ou.edu; Gertson, Rod; Jeff Bull; brian.woodard2@chk.com; Nygaard, Kris J; Timothy\_Tyrrell@xtoenergy.com; Linda McDonald; dhenry@hilcorp.com; Dellinger, Philip; platt.steve@epa.gov; Bates, William; Scott Anderson; Trenton Cladouhos; Grant Bromhal; Tim Baker; Gerry Baker; Mike Paque; Steele, Edward (GE Global Research); tom.kropatsch@wyo.gov; WRish@hullinc.com; Brad Bacon; Dorsey.Nancy@epa.gov  
**Cc:** Mike Paque; Dan Yates; Rick.Simmers@dnr.state.oh.us; Gerry Baker  
**Subject:** RE: "Traffic Light" sub-group...

Convention Center Room 618

See you there.  
Ben Grunewald  
405 255 0228

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**From:** Ben Grunewald  
**Sent:** Monday, September 29, 2014 5:16 PM  
**To:** Ben Grunewald; 'Leslie Savage'; 'Bauer, Robert A'; 'robert.worstall@dnr.state.oh.us'; 'r.hoffman@kcc.ks.gov'; 'austin.holland@ou.edu'; 'Gertson, Rod'; 'Jeff Bull'; 'brian.woodard2@chk.com'; 'Nygaard, Kris J'; 'Timothy\_Tyrrell@xtoenergy.com'; 'Linda McDonald'; 'dhenry@hilcorp.com'; 'Dellinger, Philip'; 'platt.steve@epa.gov'; 'Bates, William'; 'Scott Anderson'; 'Trenton Cladouhos'; 'Grant Bromhal'; 'Tim Baker'; 'Gerry Baker'; Mike Paque; 'Steele, Edward (GE Global Research)'; 'tom.kropatsch@wyo.gov'; 'WRish@hullinc.com'; 'Brad Bacon'; 'Dorsey.Nancy@epa.gov'  
**Cc:** Mike Paque; Dan Yates; 'Rick.Simmers@dnr.state.oh.us'; 'Gerry Baker'  
**Subject:** RE: "Traffic Light" sub-group...

[Please see the final Sunday morning agenda...](#)

DRAFT AGENDA closed working session on Sunday morning from 8:00-noon.

7:00 Breakfast provided  
7:30-8:15 Separate Subgroup meetings  
All Workgroups together 8:15-noon

8:15-9:00 - Ground Motion Subgroup

- Ground motion (i.e. peak acceleration, peak particle velocity, etc.) could be (may be) (might be) a better measurement of seismic impact to surface structures since it measures locally that energy generated by an event in units that can be directly correlated to damage potential to surface structures.
- Richter Magnitude is the standard measurement for intensity of seismic events. It is used more to quantify the total energy involved with a seismic event which then can be used somewhat subjectively to predict damage potential to surface structures. There is wider variability in the degree of surface structure damages resulting from a 4.5 Magnitude event in one location versus the damage that might be experienced from the same magnitude event in another location. A seismic event will have a single magnitude value established, however the ground motion values will vary considerably depending on the depth of the event, local geology, and distance from the epicenter.
- The potential for damage to a specific structure and/or local infrastructure will be dependent on the time duration, frequency content, and amplitudes of the ground shaking.
- Local or regional modeling is necessary to attempt to correlate magnitude intensity with ground motion values which should be a better measurement for damage potential than magnitude alone. Ground motion is highly dependent on local stratigraphic/geological conditions and depth, and local monitoring data (including accelerometer data) are necessary to develop a more accurate predictive model.
- If ground shaking is to be considered for use as a "threshold" for stoplight systems; models will need to effectively correlate earthquake energy release (e.g., Richter magnitude estimates) considering relevant ground shaking metrics (e.g., PGA / PGV, duration, frequency).
- The broad public may not fully understand the technical basis for characterizing ground shaking and assessing hazards from ground shaking, so there may be local need for enhanced public communication/education on ground shaking hazards and public news reporting of earthquake magnitudes (i.e. Richter magnitudes).

#### 9:00-9:45 - Monitoring Subgroup

- Review of Current Monitoring Capabilities
- Description of Future Monitoring Requirements
- Discussion of Proposed Models for Implementing, Funding and Operating Future Monitoring Requirements

#### 9:45-10:00 Break

#### 10:00-11:00 – Traffic Light Subgroup

- Brief overview of traffic light decision tool
- Brief status summary by state
- Discussion: Attributes to be considered (pros and cons)
  - Rational
  - Criteria
  - Pros and cons
  - How to combine metrics for decision criteria (magnitude and surface motion metrics)
  - Actions at each light
  - How to get back to green
  - Actions at each light
- Other

#### 11:00-11:30 – Data Sharing

- Regulators
  - Data currently collected
  - Additional data desired
- Industry
  - Data currently collected
  - Additional data desired
- Nature of proprietary agreements
  - Business
  - Legal
  - Etc.
- Possible compartmentalization of data
- Other possible solutions
- General information sharing to with various stakeholders
  - An online repository of general available information